false notes in the music of the spheres if they could hear it; but gentlemen of this amiable turn would probably inform Mr. Whitaker that his whole book was got up on a wrong principle, and overwhelm him with a recapitulation of what they regard as errors of omission and commission of the most formidable nature. Far from us be any such uncharitableness. To us the 'Geological Record,' as it stands, seems to be a work for which all naturalists are laid under a debt of gratitude to the editor and his *collaborateurs*; and in the few lines of criticism in which we have indulged upon one of its departments, we have been animated solely by the desire to see it rendered even still more useful during that long career which we sincerely hope lies before it.

Deep-sea Researches on the Biology of Globigerina. By G. C. Wallich, M.D. 8vo. London: J. Van Voorst, 1876.

In this pamphlet Dr. Wallich discusses in considerable detail the known facts in the life-history of the *Globigerinæ* and the inferences that have been founded upon them. He describes the various observations that have been made of the occurrence of these minute Foraminifera at great depths in the ocean, where their shells are now forming, in certain places, a chalk-like deposit of great extent—a circumstance which gives them a remarkable interest from a geological point of view. Quite recently the observations made by the naturalists of the 'Challenger' expedition have added considerably to this interest by leading them to the conclusion that not only limestones but ferruginous clays have been produced by these little creatures, which they suppose to be pelagic animals, living only in the superficial strata of the water, and sinking to the bottom after death, where their shells produce calcareous deposits at certain depths, whilst at greater depths the carbonate of lime forming the shells is dissolved before they reach the bottom, leaving only the small percentage of oxide of iron and alumina contained in them to form a deposit of red clay. That there are many difficulties connected with this view no one can deny; and Dr. Carpenter has endeavoured to get over these by a theory of his own, according to which the *Globigerinæ* actually live and breed at the bottom, but pass a portion of their lives at the surface of the ocean.

From the time of his researches in the 'Bulldog' in 1860, which first really demonstrated the occurrence of living organisms at great depths in the sea, Dr. Wallich has always maintained that the *Globigerinæ* forming the well-known "ooze" of the Atlantic seabed lived on the spots where they and their remains are found; but whilst he is no doubt much pleased at having Dr. Carpenter for once on his side, he does not by any means adopt that gentleman's opinions as to the whole history of *Globigerinæ*. Unlike Dr. Carpenter, he maintains that the spined *Globigerinæ* found abundantly at the surface of tropical seas have nothing whatever to do with those that form the deposits at the bottom; and it seems to us that the arguments adduced by him go very far towards proving, if, indeed,

they do not absolutely prove, his case—namely, that the surface and bottom *Globigerinæ* are perfectly distinct forms, and that the latter are never to be found off the bottom.

It is impossible for us here to follow the author through the long series of statements put forward by him in support of his view; and we must conclude this brief notice by simply stating that his little pamphlet furnishes a most useful *résumé* of the present state of knowledge on this interesting subject, even apart from the argument which constitutes the foundation of the whole. The book is illustrated with a plate copied from the author's 'North-Atlantic Sea-bed.'

PROCEEDINGS OF LEARNED SOCIETIES.

ROYAL SOCIETY.

December 16, 1875.—Dr. J. Dalton Hooker, C.B., President, in the Chair.

"Preliminary Observations on the Locomotor System of Medusæ." By G. J. Romanes, M.A., F.L.S.

I. *Movements of the Medusæ.*

The movements of some of the Medusæ (e.g. *Sarsia*) appear to be as *voluntary* as are those of insects. Some of the discophorous species of naked-eyed Medusæ*, when threatened with injury, manifest peculiar movements, which are quite distinct from the ordinary locomotor contractions. These movements consist in a very strong and protracted systole, followed by a slow and gradual diastole. This spasm-like series of movements is never performed by any Medusa except when the animal is being injured or threatened with injury.

II. *Fundamental Observations.*

§ 1. In the case of all the naked-eyed Medusæ which I have this year been able to procure (viz. thirteen species belonging to six of the most divergent genera) I find it to be true that excision of the extreme periphery of a nectocalyx is followed by immediate, total, and permanent paralysis of the entire organ. The severed margin, on the other hand, continues its rhythmical contractions as vigorously as when it was still *in situ*, and this for many hours after the operation. Among hundreds of observations I have only met with one exception to the otherwise uniform result of this operation. The exception occurred in an individual belonging to the species *Staurophora laciniata*.

* I adhere to Forbes's classification only because I have not happened to meet with any individuals of the family Lucernariadæ.